



**Fermi National Accelerator Laboratory**

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**Technical Division  
Headquarters & Quality Assurance**

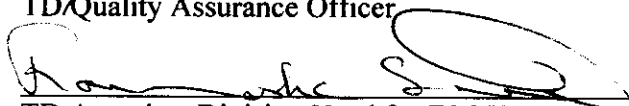
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**Operational Readiness Clearance**

**TD-1140**

**Version 1**

  
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TD Quality Assurance Officer

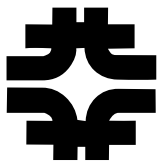
  
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TD Associate Division Head for ES&H

  
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Approved, Technical Division Head

30-Sep-2002  
Date

9/30/02  
Date

9/30/02  
Date



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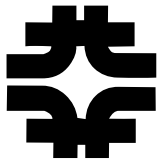
## APPENDIX A - RELATED DOCUMENTS

### Revision History

Version	Date	Section No.	Specifics
1	30-Sep-2002	All	Initial release

### Controlled Distribution

Technical Division Library  
Senior Safety Officer  
TD Department Heads



## **1.0 Introduction**

The Technical Division mission is:

“The research, development, design, fabrication, and testing of accelerator and detector components.”

In view of the level of complexity of the work done in the Technical Division, it is very important to implement a formal, i.e. documented, program that describes the practices used by the Division to address issues related to personnel and equipment safety, risk management and quality assurance.

The purpose of the Operational Readiness Clearance (ORC) policy is to ensure Technical Division operations are conducted in a safe and effective manner. As a part of Integrated Safety Management (ISM), this system of checks and balances has been in effect in the Technical Division for many years, and has proven to be effective. The Operational Readiness Clearance Policy TD-1140 formalizes this process and should be used as a resource in aiding project managers in securing an ORC in an expeditious manner.

## **2.0 Scope**

The policies and procedures described in this document apply to all work done within the Technical Division.

## **3.0 Policy**

It is the policy of the Technical Division that all projects involving high levels of risk are reviewed for operational readiness prior to commencing operations. Refer to section 5 for further definition of "high levels of risk."

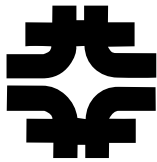
As a part of Integrated Safety Management, it is the policy of the Technical Division that all environmental, safety and health (ES&H) issues are incorporated into the project design process. Safety is not an afterthought; it is part of everything that we do as a Division.

## **4.0 Roles and Responsibilities**

### **4.1 Division Head**

The Division Head has overall responsibility for the development and implementation of the TD Programmatic, ES&H and QA programs. For all projects and specifics related to ORC, the Division Head:

1. Is responsible for providing direction on the extent to which an ORC review is conducted;
2. Is the only person who has the authority to issue clearance for a project to commence operation after an ORC review has been triggered and completed;



3. Selects the members of the ORC review panel. This includes naming as many Subject Matter Expert(s) (SME) as are necessary. The Division Head ensures that SME(s) are skilled and knowledgeable in the technical areas being reviewed.

#### **4.2 *Project Managers or Department Heads***

The Project Manager is the person designated as the leader of the project in question. Sometimes Department Heads are the project leader, and so for the purposes of this document the role of Department Head and Project Manager is treated the same, and we use the term "Project Manager" to cover both roles.

The Project Manager:

1. Ensures that Integrated Safety Management (ISM) is an integral part of the project;
2. Ensures that all sources of energy, and other potential hazards, are identified and documented;
3. Ensures that a written hazard analysis or operating procedures are completed and controls are established to mitigate the hazard(s);
4. For Projects which meet the trigger points defined in Section 5 below, requests ORC from the Division Head prior to turning on the equipment;
5. Provides complete and accurate records to TD Headquarters or to the designated review panel;
6. Ensures that all recommendations from all concerned parties are adequately addressed.

It is the responsibility of the Project Manager to address all ES&H related issues **PRIOR** to requesting ORC of the Division Head, i.e. ES&H is already incorporated into the design process so that there are no unresolved or unforeseen ES&H issues when requesting for an ORC.

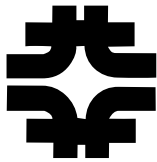
#### **4.3 *ORC Review Panel***

The purpose of the review panel is to review the project for all technical, ES&H and quality issues. A portion of the panel should consist of personnel not directly involved with the project (i.e. third party), and include as many Subject Matter Experts (SME) as necessary for the review.

The review panel chairperson coordinates the review and generates a written report summarizing the review, all concerns identified, and final recommendations.

#### **4.4 *Subject Matter Expert***

A SME is a person recognized, by his or her peers, as being sufficiently knowledgeable in a specific subject, as demonstrated by experience, academic credentials or certifications. The role of a SME is to assist the review panel in technical issues related to the project.



#### **4.5 Senior Safety Officer**

On request of the project manager, the Senior Safety Officer (SSO) is responsible for assisting the project manager in all aspects of reviews for all ES&H issues throughout the project.

### **5.0 Trigger Points**

ORC reviews are based on risk. That is, there is a certain level of risk which triggers the need for an ORC review. Higher risk may require third-party reviews, while lower risk may require internal reviews as part of the normal design process.

The main challenge in this system is to determine when and of what level a formal ORC review is needed. The guidelines provided here are intended to aid the Project Manager and TD-HQ in determining the extent of an ORC review.

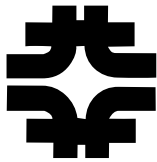
Factors that trigger the need for an ORC review include:

- The equipment has a programmatic impact on Fermilab operations;
- The equipment is a prototype, designed as one-of-a-kind;
- The equipment is a first article, which has never been operated before (or it has been sufficiently long since it was last operated);
- Potential exists for energy release capable of producing injury or equipment damage. Energy could be in the form of electrical, mechanical, chemical or excessive noise, and energy does not need to be in large amounts to be dangerous;
- The use of extreme cold or hot materials, capable of inflicting injury;
- The use of flammable gases;
- Potential exists for an unacceptable impact on the environment;
- An ODH condition may result.

### **6.0 Operational Readiness Clearance Procedure**

This section outlines the general flow for the ORC process:

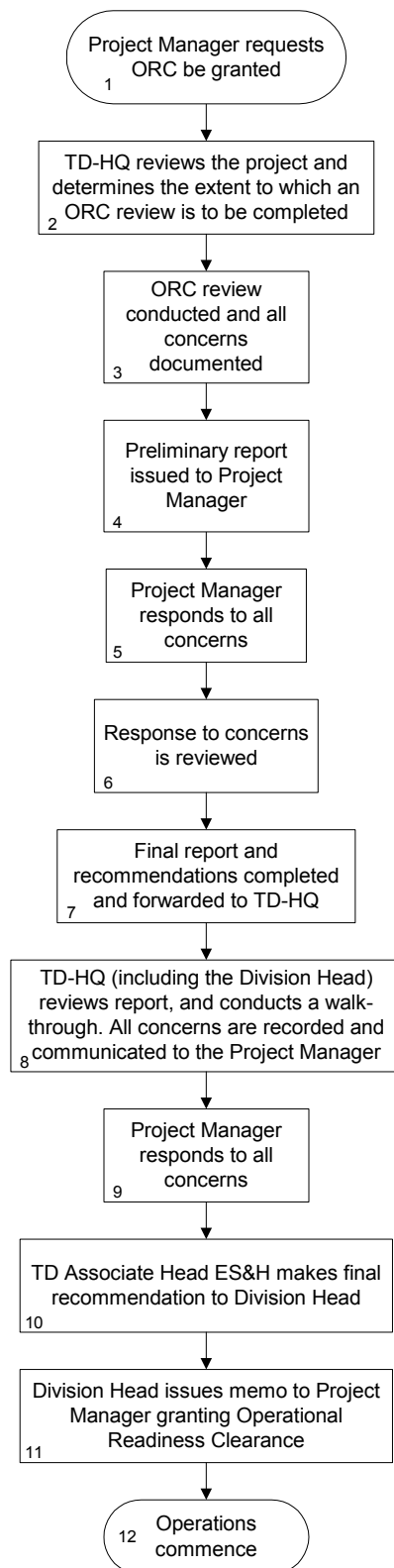
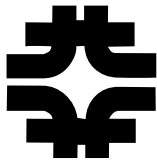
1. Project Manager formally requests of TD-HQ that an ORC be granted. It is expected that all safety-related issues are addressed prior to requesting ORC.
2. TD-HQ determines the extent to which an ORC review is to be completed. Based on the risk of the Project, and the extent to which the Project Manager has addressed the risks, the review could range from very informal to very formal (e.g. the SSO or other individuals individually review the Project records, a formal panel review is convened, et cetera). If the review is to be performed by a panel, then review panel members are selected, and a chairperson and an appropriate number of SMEs are identified. If the review is to be performed by the SSO, then TD-HQ requests that the SSO conduct a review and submit a report and recommendations.



The review records should include the following:

- Design specifications and calculations;
  - Equipment drawings;
  - Material certifications and test records;
  - Planned inspections and tests;
  - Descriptions of safety systems incorporated into the design;
  - Installation and operating procedures (OP);
  - Hazard analysis, if OPs or other work instructions are not used;
  - Environment, safety and health concerns and controls.
4. A preliminary report is issued to the Project Manager. This report identifies all concerns raised as a result of the review.
  5. The Project Manager determines appropriate actions to reconcile all reported concerns, and documents such actions.
  6. The response to the concerns is reviewed, and, as necessary, feedback is provided to the Project Manager. It may also be necessary to conduct a follow-up review.
  7. The final report is completed and is forwarded to TD-HQ. The report should include all areas reviewed, all action items and final recommendations.
  8. TD-HQ, including the Division Head as necessary, reviews the report, and organizes and conducts a tour of the equipment, apparatus or system to look at all technical, ES&H and quality issues. All concerns are recorded and communicated to the Project Manager.
  9. The Project Manager determines appropriate actions to reconcile all reported concerns, and documents such actions.
  10. Based on the reconciliation of all concerns, the TD Associate Head for ES&H makes final recommendations for an ORC to the Division Head.
  11. Based on the Division Head's full satisfaction, a formal ORC memo is issued to the Project Manager.
  12. After approval from the Division Head, the Project Manager commences operations.

The next page depicts the Operational Readiness Clearance process in a flow chart. The numbers match the step numbers listed above.





*Hazard Analysis for Fermilab Employees (FESHM chapter 2060)*

<http://www-esh.fnal.gov/FESHM/2000/2060.pdf>  
<http://www-esh.fnal.gov/FESHM/2000/2060.html>

*Hazard Analysis form*

<http://www-esh.fnal.gov/FESHM/2000/2060.pdf>  
[http://www-esh.fnal.gov/FESHM/2000/2060\\_FormHA.doc](http://www-esh.fnal.gov/FESHM/2000/2060_FormHA.doc)

*PPD ES&H Review of Experiments (PPD\_ESH\_006)*

[http://www-ppd.fnal.gov/ppd\\_www/Operating\\_Manual/opmanframes.htm](http://www-ppd.fnal.gov/ppd_www/Operating_Manual/opmanframes.htm)

*BD Safety Review of Small Projects*

[http://www-bd.fnal.gov/hq/BD\\_Policies/Project\\_Safety.pdf](http://www-bd.fnal.gov/hq/BD_Policies/Project_Safety.pdf)

*Fermilab Policy Manual*

<http://www.fnal.gov/directorate/documents.html> ("Fermilab Director's Policy Manual")

*Fermilab ES&H Manual*

[http://www-esh.fnal.gov/home/esh\\_home\\_page.html](http://www-esh.fnal.gov/home/esh_home_page.html) ("Manuals and Procedures")